CHAPTER 7

NUTRITION AND MENU PLANNING

One of your most important duties as a senior Mess Management Specialist (MS) is to see that the general mess (GM) customers are always well fed. To be well fed means that they should have not only enough food but also the right kind of food in the proper combinations; that is, foods containing the correct amounts of the various nutrients necessary to good health and well-being. To accomplish this, the menus must be carefully and skillfully planned to produce the right combinations of food in dishes that will appeal to the personnel to whom they are served. This should be accomplished within your budget and with the food items you have had the foresight to stock on board. This service must be carried out afloat and ashore, consistently, under varying operating conditions, in widely differing geographic locations, and in all kinds of weather.

The purpose of this chapter is to provide you with the information and guidance needed in the areas of menu planning, and nutrition, and ultimately, in the supervision of other personnel in this area.

The foodservice division is a customer service oriented division, and customer satisfaction is one of our primary goals. We should take every opportunity to motivate the personnel who man the contact points (galley, serving line, and mess area), whether civilian or military, to do their best and to take pride in the caliber of service they provide their shipmates. Motivating our personnel in these positions provides a special challenge to the senior MS. We should make sure the personnel manning these contact points realize that they are part of a people-oriented team, that they are an important part of our Navy, and that the positions they hold at these contact points are positions of special trust that support our most important resource-our Navy men and women.

NUTRITION

Nutrition is the science of the nourishment of the human body, the science of food. To master this science we should familiarize ourselves with the nature of food. Food is composed of various nutrients: proteins, carbohydrates, fats, minerals, vitamins, and water.

Nutrition concerns itself with determining what components are needed and how much of each is required to maintain healthy bodies. Nutrition concerns itself with the ways in which foods are altered in processing, storage, and preparation, and in the ways in which foods are transformed chemically in the body. Nutrition deals with the preparation and serving of foods in such a way as to make sure the nutrients necessary to good health are not unnecessarily lost in the process. In addition, nutrition should be concerned with the social, economic, cultural, and psychological implications of foods.

When you prepare your next meal, the patrons will have definite ideas-positive or negative-about the meal and the specific foods that are served. They may delight in the variations in the texture, in the color combinations of the food, in the artistic touch of a garnish, or they may find the food unacceptable because the fuel lacks color or is carelessly served. They may enjoy the tantalizing smell of meat, of freshly baked rolls, or the fragrance of fully ripened fruit. The odor of grease that has been too hot or of vegetables that have been cooked too long may cause lack of appetite and even nausea The patrons will experience countless flavors-the salty, sweet, bitter, and sour tastes and their variations; they will feel the textures of smooth or fibrous, crisp or soft, creamy or oily, moist or dry foods. The provision of a nutritious diet, well cooked and attractively served, plays an important part in the acceptability of a meal.

FOOD CONTENT

Food is any substance consisting essentially of protein, carbohydrates, fats, minerals, vitamins, and water that is used in the body to sustain growth, to build and repair tissues, to furnish energy, and to sustain the vital processes of the body. The body's needs for the various nutrients vary with age, sex, occupation, and environment. A child needs certain foods to grow and the body continues to require certain foods for its upkeep. Vitamins, minerals, and proteins provide regulators that enable the body to use other materials. Fuel for the body's energy and warmth is provided by food.

Calories

A knowledge of the calorie content of food is important to you as an MS. Your skill in developing healthy menus plays a critical role in the support of the physical fitness and personal appearance of Navy personnel. The role of the foodservice division in meeting this need is providing lower calorie food choices. Some low-calorie food choices include low-calorie salad dressing; salads and relishes (raw vegetables); skim and/or low-fat milk; fresh and/or tamed fruit drained of syrup; lean meat, poultry, fish, or seafood without added high-calorie sauces or gravies; a vegetable choice without added fat; and light desserts in smaller portions. Think-thin menus are planned using the same principles and standards used for the general menu and should be based on the general menu. Think-thin menus should include all the basic menu components while eliminating high-calorie extras such as gravies, sauces, and toppings. Calorie content is influenced by preparation methods and portion size. Guidance on planning low-calorie meals, low-fat food preparation, and think-thin portion sizes of Armed Forces Recipe Service (AFRS) recipes is contained in *Foodservice Operations,* NAVSUP P421.

Food Nutrients

There are six types of food nutrients. Most of us can get enough of these nutrients by eating foods from the major food groups each day. These nutrients are discussed next.

PROTEINS.— The chief function of protein in the body is to supply the tissue-building material. Protein itself is a chemically complex organic substance that contains nitrogen in combination with carbon, oxygen, and hydrogen. In the process of digestion, these substances break down into smaller units called amino acids. These units, in turn, are rebuilt into body protein. Certain amino acids are necessary for maintaining growth, weight, and good health. Foods are classified as protein foods only when they contain protein in sufficient amounts to be of value when the food is consumed in normal amounts.

Animal protein foods-meat, poultry, fish, eggs, milk, and milk products, such as cheese-contain the necessary amino acids essential to body structure. The protein in cereals, vegetables, and legumes lacks some of the important amino acids and alone cannot support growth. However, vegetable proteins such as dried beans, dried peas, and peanuts can supplement the animal proteins, and when they are served in the proper combination can provide all the essential amino acids without the addition of any animal protein.

FATS.— Fats provide twice as much energy and calories as do carbohydrates or protein. Fats are important in the diet to furnish energy, provide essential fatty acids, transport fat-soluble vitamins and aid in their absorption, increase palatability, and give a feeling of fullness. However, it is becoming increasingly clear that excessive amounts of total fat may lead to an increased risk of coronary heart and vascular diseases. Emphasis should be placed on planning menus toward attainment of lower fat concentrations while maintaining acceptability. A significant reduction of fat can be achieved by lowering added fats during food preparation and increasing the proportion of lean meats, fish, poultry, skim milk, and other low-fat dairy products in the menu.

CARBOHYDRATES.— Carbohydrates are generally low in calories and fat and high in fiber. Complex carbohydrates are found in grains, vegetables, and legumes such as dried beans and split peas. Nutritionists recommend that we get at least 55- to 60-percent of our calories from complex carbohydrates. Complex carbohydrate foods play an important role in weight control. They supply the body with energy in a constant, time-released manner. Since carbohydrates supply sustained energy, athletes should get 60- to 70-percent of their calories from carbohydrates. Carbohydrates are stored in the muscles as glycogen, which is essential for endurance. Additionally, a diet high in the soluble fiber found in legumes, fruits, vegetables, and some grains may play a role in lowering blood cholesterol.

MINERALS.— Twenty known minerals are essential to health. Some of the more important minerals will be explained next.

Calcium.— The most abundant mineral in the body is calcium and, except for iron, it is the most Likely to be inadequate in the diets of many age groups. (From the age of 9, the diets of many girls and women may lack as much as 25 percent to 30 percent of the calcium they need.) Almost all calcium, and most phosphorus, which works closely with calcium in the body, is in the bones and teeth.

The rest plays a vital role in tissue and body fluids. Soft tissue, or muscle, also has a high phosphorus content. Calcium is required for blood to clot and for the heart to function normally. The nervous system does not work properly when calcium levels in the blood are below normal.

In the United States we rely on milk as a basic source of calcium, and 2 cups of milk, or an equivalent amount of cheese or other dairy products except butter, go a long way toward supplying all the calcium needed for the day.

But milk is not the only source. Dark green leafy vegetables, such as collards, mustard greens, or turnip greens, provide some calcium, and salmon and sardines supply useful amounts of it if the very tiny bones are eaten.

Phosphorus.— Phosphorus is necessary for building bones and teeth. Milk, cheese, eggs, meat, legumes, nuts, whole grain cereals, and vegetables are good sources of this mineral.

Iron.— Iron carries oxygen in the blood. The best sources of iron are meats (especially liver). But foods from some plants, such as dried beans, dark green leafy vegetables, and grains, are good sources of iron, especially when eaten along with foods rich in vitamin C. Vitamin C helps the body absorb iron better.

Iodine.— The most important fact about iodine is that a deficiency of it can cause a goiter—a swelling of the thyroid gland. Important sources are seafoods, plants grown in the soil near the sea, and iodized salt, which is used in all Navy messes.

Salt.— Salt is needed by everyone. A person needs about 1 level teaspoon of salt per day and more when a person perspires a great deal. The average intake of salt is from 2 to 3 teaspoons daily, which is enough for a person drinking up to about 4 quarts of water. A person who is not getting enough salt will become weak.

Many Americans eat more salt and sodium than we need. Salt contains sodium and is already present in many canned or processed foods. Excess salt contributes to high blood pressure in some people.

Sodium (salt) has been reduced in AFRS recipes to minimum acceptable levels. Sodium can be further reduced in recipes by using the following guidelines:

- Season food with herbs and spices instead of high-sodium items like salt, soy sauce, or steak sauce.
- Choose fresh rather than canned food items.
- Look for prepared foods that say low or reduced sodium on the label.

VITAMINS.— There are about 13 vitamins that are absolutely necessary for good health. Four are called fat-soluble vitamins because they dissolve in fat. These are vitamins A, D, E, and K. They are digested and absorbed with the help of fats from the diet. These vitamins can be stored in the body for long periods of time, mostly in fatty tissue and in the liver.

Nine other vitamins are called water soluble. They include eight B vitamins and vitamin C. These vitamins are not stored in the body very long, so you need to eat foods that are good sources of these vitamins every day.

A few of these vitamins are of great importance and you should know what foods provide them.

Vitamin A.— This vitamin plays a very important role in eye function and in keeping the skin and mucous membranes resistant to infection. Although vitamin A occurs only in foods of animal origin, the deep yellow and dark green vegetables and fruits supply a material—carotene—that your body can turn into vitamin A.

Vitamin A is found in yellow, orange, and green vegetables; yellow fruits; and in the fat of animal products like fish, milk, eggs, and liver. Both cheese made from whole milk, and margarine enriched with vitamin A supply this vitamin.

Vitamin C.— Vitamin C, ascorbic acid, is not completely understood, but it is considered important in helping to maintain the cementing material that holds body cells together. Vitamin C is needed for wound healing; for development of blood vessels, bones, teeth, and other tissues; and for minerals to be used by the body.

Vitamin C is found in citrus fruits, melons, berries, leafy green vegetables, broccoli, raw cabbage, spinach, and turnip and collard greens. Potatoes and sweet potatoes provide helpful amounts of vitamin C and so do tomatoes and peppers.

Vitamin D.— Vitamin D is readily available in fortified milk. Sunlight enables the body to produce this vitamin if it has a chance to shine directly on the skin. Vitamin D is needed for using calcium and phosphorus to build strong bones and teeth. Vitamin D is added to most milk. It is also found in fatty fish, liver, eggs, and butter.

Vitamin E.— Vitamin E helps preserve the cell tissues. Although vitamin E's exact role in the body is not fully understood, it is being explored as an antioxidant that may retard some aspects of the aging

process. Vitamin E is found in a wide variety of foods, and most people get enough. Vegetable oils and whole grain cereals are particularly rich sources.

Vitamin K.— Vitamin K is essential because it indirectly helps blood to clot. Vitamin K is widely distributed in a variety of foods such as the green and leafy vegetables, tomatoes, cauliflower, egg yolks, soybean oil, and any kind of liver. It is also manufactured in the body.

Three of the best known B vitamins-riboflavin, thiamine, and niacin-release the energy in food. They also have a role in the nervous system, keep the digestive system working calmly, and help maintain a healthy skin.

Thiamine (B1).— Thiamine is abundant in only a few foods. Lean pork is one. Dry beans and peas, some of the organ meats, and some nuts supply some thiamine.

A lack of thiamine (vitamin B) causes beriberi. Fortunately, this disease is now almost nonexistent in the United States, although it is still seen in some alcoholics.

Riboflavin (B_2).— Riboflavin is easy to find and extremely important in the diet. It is plentifully supplied by meats, milk and whole grain or enriched breads and cereals. Organ meats (liver, kidney, and so on) also supply this vitamin.

Niacin.—Niacin (nicotinic acid) prevents a disease called pellagra. It aids in digestion and the health of the skin.

Whole grain and enriched cereals and bread are dependable sources of niacin. Niacin also can be found in meat and meat products and peas and beans.

Other B Vitamins.— Other B vitamins, such as B_6, B_{12}, and folacin, are needed to maintain normal hemoglobin-the substance in blood that carries oxygen to the tissues. Vitamin B_{12} occurs in foods of animal origin. Folacin helps in the production of red blood cells and is available in many foods but in small quantities. Sources of folacin are liver, green vegetables, whole grains, and dry beans.

Strict vegetarians run a risk of developing the symptoms of B_{12} deficiency; these include soreness of the mouth and tongue, numbness and tingling in the hands and legs, anemia and loss of coordination.

WATER.— Water is often called the forgotten nutrient. It is needed to replace lost body water, Water helps transport nutrients, remove waste, and regulate body temperature.

CONSERVING NUTRIENTS.— It is not enough just to select the proper foods for the menu. They must be prepared in such a way that valuable nutrients are not lost. Table 7-1 presents summary information about vitamins. In addition to listing foods that are good sources of vitamins, it also shows conditions under which the vitamin content may be reduced and the effect of their deficiency in the diet. This information will be valuable to you in making and analyzing menus, and also in conserving vitamins during cooking. The term *stability* used in the illustration refers to the ability of the various substances to withstand destruction under the conditions mentioned.

The following cooking rules, if followed, will make your meals more nutritious and add to the general health of the crew.

- Serve fresh fruits and vegetables as soon after you receive them as possible.
- Handle fresh fruits and vegetables carefully because bruising causes a rapid loss of vitamins.
- Store fresh fruits and vegetables properly until they are to be used.
- Do not soak vegetables in water longer than necessary to freshen or clean them. Water will dissolve vitamins B_1, B_2, C, and minerals.
- To cook vegetables, place them in rapidly boiling water. Bring the water back to a boil and reduce to a simmer.
- Cook vegetables quickly and just until tender in order to leave them with some of their original crispness.
- Cook vegetables in as little water as possible.
- Do not throw away cooking water. Save it for use in soups, sauces, and gravies.
- Heat canned vegetables quickly just before serving.
- Shred outer leaves of lettuce, cabbage, and green leaves of celery for use in flavoring soups.
- Serve fruits and vegetables raw in salads.

Table 7-1.-Summary Information on Vitamins

Chemical name	A	C	D	Vitamin B complex		
	Carotene	Ascorbic acid	Calciferol	Thiamine (B_1)	Riboflavin (B_2)	Niacin
Important food sources	Liver Egg yolk Vegetables Green Yellow Butter Cream Fish-liver oil	Citrus fruits Cabbage Tomatoes Cantaloupes Strawberries Potatoes in jackets	Fish-liver oil Butter Egg yolk Liver	Pork Liver Organ meats Nuts Legumes Whole wheat Whole grains Wheat germ	Liver Meats Eggs Milk Enriched bread Vegetables Green Leafy	Meat Fish Poultry Liver Green peas
Stability: cooking & drying light	Gradual destruction by exposure to heat and drying at high temperature.	Unstable to heat and oxidation, except in acids. Destroyed by drying and aging.	Stable to heating, aging, and storing.	Unstable to heat and oxidation.	Stable to heat in cooking, to acids and oxidation. Unstable to light.	Stable to heat, light, and oxidation, acids and alkalis.
Lack of this vitamin causes	Night blindness; Glare blindness, Rough dry skin Dry mucous membrane	Scurvy Sore mouth Stiff joints Sore and bleeding gums Weak-walled capillaries	Rickets Soft bones Bowed legs Poor teeth Skeletal deformities	Beriberi (man) Poor appetite Constipation Fatigue	Eye sensitivity Cataract	Pellagra

- Prepare fruits and vegetables for salads just before serving.
- When salmon salad is prepared, save the juice and use it in salad dressing or as a part of the liquid for salmon loaf or sauce.
- Prepare hot foods just in time to be served. Never prepare them early and reheat them.

The foods that we eat each day must supply the proteins, carbohydrates, fats, minerals, and vitamins that are needed to maintain the body in a healthy condition. Most foods centain more than one nutrient, but no single food provides all the nutrients in proper quantities. Therefore, it is necessary for the diet to include a variety of foods, and this is accomplished through well-planned menus.

Menu planners should judge the nutritional adequacy of their menus and special rations. Detailed analysis of nutrients is not required if the menu includes a wide variety of foods and the food guide pyramid for daily food choices is used. This pyramid provides a simple, quick, and reliable method of judging the menu's nutritional adequacy. The guide divides commonly eaten foods into five major food groups according to the nutritional contributions they make.

FOOD GUIDE PYRAMID

In April 1991, the Secretary of Agriculture unveiled the food guide pyramid, which replaced the basic four food groups.

This pyramid (fig. 7-1) is a visual companion to the Dietary Guidelines for Americans. The new graphic conveys the three essential elements of a healthy diet: proportion, moderation, and variety.

- Proportion is the relative amount of food to choose from each major food group.
- Moderation is eating fats, oils, and sugars sparingly.
- Variety emphasizes the importance of eating a selection of different foods from each of the major food groups every day.

Table 7-2 illustrates the range of caloric intake and servings needed from each major food group based on activity level. **NOTE:** The minimum suggested servings on the pyramid are the minimum number of servings needed each day to stay healthy, even when trying to lose weight.

The food pyramid graphically communicates the message of the Dietary Guidelines for Americans—diets should be built upon a base of complex carbohydrates and less fat. The placement of the food groups starting at the base of the pyramid conveys the current recommendations. These recommendations are as follows: eat more grains, vegetables, and fruits; eat moderate amounts of lean meats and dairy foods; and use sweets, fats, and oils sparingly. The food guide pyramid graphic (fig. 7-1) shows that all food groups are important to the diet.

Grain, Cereal, Rice and Pasta Group

The food pyramid emphasizes whole grain and cereal foods as the basis of a nutritious diet. Wheat, corn, oats, and other grains have very little fat and are cholesterol free. These foods provide complex carbohydrates—an important source of energy, especially in low-fat diets. They also provide fiber.

A person needs 6 to 11 servings from this group daily, depending on their activity level. You should offer whole grain and enriched or fortified products, but be sure to include some whole grain bread or cereals.

WHAT IS A SERVING?— It includes all products made with whole grain or enriched flour or meal such as bread, biscuits, muffins, waffles, pancakes, cooked or ready-to-eat cereals, cornmeal, flour, grits, macaroni and spaghetti, noodles, rice, rolled oats, and barley.

The following are some examples of a typical serving from the grain group:

- 1 slice of bread
- 1/2 cup of cooked cereal, cornmeal, grits, macaroni, noodles, rice or spaghetti

Table 7-2.—Range of Caloric Intake and Servings Needed Based on Activity Level

Calories:	Sedentary 1,600	Active 2,200	Very Active 2,800
Servings of:			
Breads and grains	6	9	11
Vegetables	3	4	5
Fruits	2	3	4
Milk and dairy products	2 to 3*	2 to 3*	2 to 3*
Meat group (oz)	5	6	7
Total fat (g)	53	73	93
Total added sugar (tsp)	6	12	18

*Pregnant women, nursing mothers, teenagers, and young adults to age 24 need three servings.

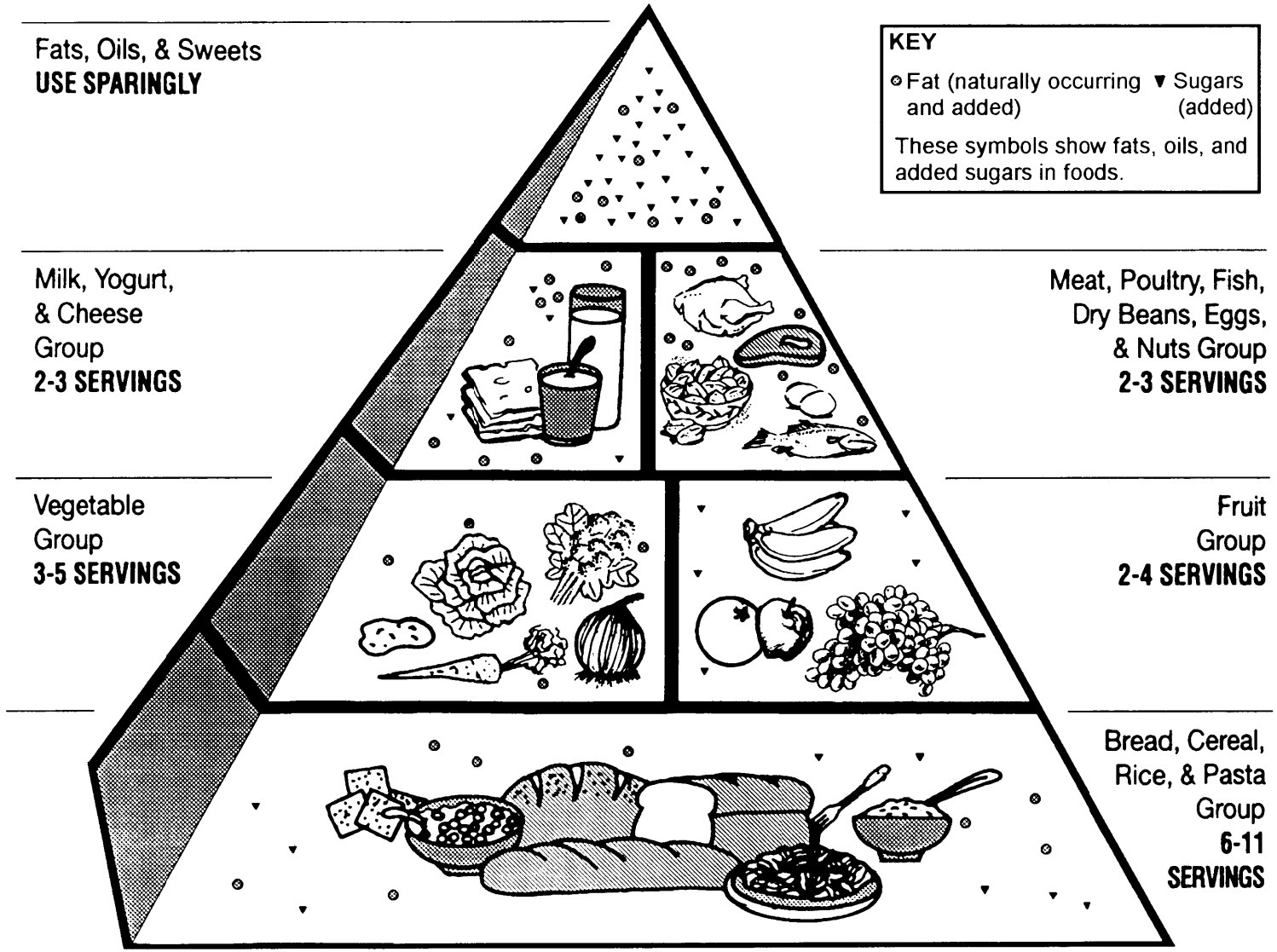


Figure 7-1.—The food guide pyramid for daily food choices.

. 1 ounce of ready-to-eat cereal

NUTRITIVE VALUE.— These whole grain or enriched foods are important sources of B vitamins and iron. They also provide protein and are a major source of this nutrient in vegetarian diets. Additionally, they contribute magnesium, folacin, and fiber.

Most breakfast cereals are fortified at levels higher than those occurring in natural whole grain. In fact, some fortification adds vitamins not normally found in cereals (namely, vitamins A, B_{12}, C, and D). However, even these cereals (if refined) and other refined products (enriched or not) maybe low in some other vitamins and trace minerals. This is because these nutrients are partially removed from the whole grain in the milling process and not replaced. Thus, it is a good idea to include some less refined or whole grain products in your menu.

Vegetable Group

Vegetables are naturally low in fat and contain no cholesterol. They provide vitamins such as vitamins A, C, and folate, and minerals such as iron and magnesium. Vegetables also provide fiber. Unlike the traditional "basic four," the food pyramid separates vegetables and fruits into individual groups to highlight how important it is to get adequate amounts of both.

Because vegetables are so important, GM menus should offer two hot vegetables at both lunch and dinner meals whenever possible. This gives the patrons a choice they will enjoy and improves the nutritional profile of the meal. You should note that the portion size of cooked vegetables was increased to 3/4 cup in the *Armed Forces Recipe Service,* NAVSUP P-7, in September 1992.

A person needs 3 to 5 servings daily, depending on their activity level. You should include one good vitamin C source each day. Also include deep yellow or dark green vegetables (for vitamin A) and unpeeled vegetables, especially those with edible seeds (for fiber).

WHAT IS A SERVING?— It includes all vegetables. You should count the following as a serving from the vegetable group:

- 1 cup of raw leafy vegetables
- 1/2 cup of other vegetables that are cooked or chopped raw
- 3/4 cup of vegetable or tomato juice

NUTRITIVE VALUE.— Different types of vegetables provide different nutrients; therefore, your menu should feature a variety of vegetables. Dark green and deep yellow vegetables are good sources of vitamin A. Most dark green vegetables, if not overcooked, are also reliable sources of vitamin C. They are also valued for providing riboflavin, folacin, iron, and magnesium. Certain greens-collard, kale, mustard, turnip, and dandelion-provide calcium. Nearly all vegetables are low in fat, and none contain cholesterol.

Fruit Group

Most fruits are low in fat and free of cholesterol. Fruits and fruit juices provide important amounts of vitamin A and potassium. The food pyramid suggests a person receive 2 to 4 servings daily from this group, depending on their activity level.

WHAT IS A SERVING?— It includes all fruits. You should count the following as examples of a serving from the fruit group:

- A medium apple, orange, or banana.
- 1/2 cup of chopped, cooked, or canned fruit.

1/2 cup of fruit juice. You should only count 100-percent fruit juice as fruit.

NUTRITIVE VALUE.— Any kind of fruit fits into a low-fat diet. Nearly all fruits are low in fat, and none contain cholesterol. This group is also important for its contribution of vitamins A and C and fiber. As with vegetables, different types of fruits provide different nutrients. Reliable sources of vitamin C are citrus fruits (oranges, grapefruits, lemons), melons, and berries. Fruits with skin have more fiber.

Milk, Yogurt, and Cheese Group

Milk products provide protein, vitamins, and minerals as well as fat, cholesterol, and calories. Milk yogurt, and cheese are the best sources of calcium. The food pyramid suggests 2 to 3 daily servings of milk, yogurt, or cheese each day, depending on a person's activity level. Most people only need *2* servings. However, 3 servings are suggested for pregnant women, nursing mothers, teenagers, and young adults to age 24. Young adults should continue to have 3 servings of the milk group until age 24. This is to ensure a calcium intake that allows the development of peak bone mass during the formative years.

WHAT IS A SERVING?— It includes milk in any form such as whole, skim, low-fat, evaporated,

buttermilk, and nonfat dry milk. A serving also may consist of yogurt, ice cream, ice milk, and cheese, including cottage cheese. You should count the following as examples of a serving from the this group:

- One 8-ounce cup of milk or yogurt
- 1 1/2 ounces of natural cheese
- 2 ounces of processed cheese

NUTRITIVE VALUE.— Milk and most milk products are relied on to provide protein, calcium, phosphorus, and vitamins A, B_1, B_2, and B_{12}. In fact, milk and most milk products are the major source of calcium in the American diet. Also, liquid milk is fortified with vitamin D, which aids in the absorption of calcium. When fortified with vitamins A and D, low-fat or skim milk products have essentially the same nutrients as whole milk products, but fewer calories and less fat content.

Some dairy products contain large amounts of fat and cholesterol. However, low-fat dairy products contain equivalent amounts of calcium. To provide lower fat choices for your patrons, cook with nonfat dry milk; serve 1 percent low-fat and skim milk; offer low-fat yogurt and lower fat milk desserts, like ice milk or frozen yogurt. Include cheese scheduling in your menu planning. For example, au gratin potatoes and club spinach both have cheese. Therefore, limit to one dish of either per meal.

Meat, Poultry, Fish, Dry Beans, Eggs, and Nuts Group

The food pyramid suggests 2 to 3 servings each day from this group, depending on a person's activity level. The total amount of these servings should be equivalent to 5 to 7 ounces of cooked lean meat, poultry, or fish per day.

WHAT IS A SERVING?— It includes beef, veal, lamb, pork poultry, fish, shellfish (shrimp, oysters, crabs, and so on), organ meats (liver, kidneys, and so on), dry beans or peas, soybeans, lentils, eggs, seeds, nuts, peanuts, and peanut butter.

Counting to see if you have an equivalent of 5 to 7 ounces of cooked lean meat can be difficult. This is because portion sizes vary with the type of food and meal. For example, 6 ounces may come from one egg for breakfast (count as 1 ounce of lean meat); 2 ounces of sliced turkey in a sandwich for lunch; and 3 ounces of cooked hamburger for dinner.

NUTRITIVE VALUE.— Meat, poultry, and fish supply protein, B vitamins, iron, and zinc. The other foods in this group—dry beans, eggs, and nuts-are similar to meats in providing protein and most required vitamins and minerals.

It is a good idea to vary the choices among these foods as each has distinct nutritional advantages. For example, red meats and oysters are good sources of zinc. Liver and egg yolks are valuable sources of vitamin A. Dry beans, dry peas, soybeans, and nuts are worthwhile sources of magnesium. The flesh of fish and poultry is relatively low in calories and saturated fat. Some seeds such as sunflower and sesame contribute polyunsaturated fatty acids that are an essential part of a balanced diet.

Cholesterol, like vitamin B_{12}, occurs naturally only in foods of animal origin. All meats contain cholesterol, present in both the lean meat and the fat. The highest concentration is found in organ meats and in egg yolks. Fish and shellfish, except shrimp, are relatively low in cholesterol. Dairy products also supply cholesterol.

The meat group is an excellent place to trim the fat in the diet. Contrary to popular belief, red meat does not need to be avoided. Red meat is a good source of protein, iron, zinc, and several other important nutrients. The idea is to cut down on large servings of meat-not eliminate it entirely. Fish is naturally low in fat and so are dry beans and peas.

To reduce fat from the meat group, choose lean meats most of the time; take the skin off poultry; trim any extra fat off meat; eat more fish, dry beans, and peas. Trim the fat off meat; broil, roast, or simmer, instead of frying. Nuts and seeds are high in fat, eat in moderation.

The following are some lean meat choices that you should incorporate into your menu:

- Beef—roast or steaks from the round, loin, sirloin, or chuck arm cuts.
- Veal—all cuts except ground.
- Lamb—roasts or chops from the leg or loin cuts.
- Pork—roasts or chops from the tenderloin, center loin, or ham cuts.
- Chicken and turkey—light and dark meat without skin.
- Fish—most are low in fat, those marinated or canned in oil are higher.

Fats, Oils, and Sweets

Fats, oils, and sweets are at the top of the food pyramid and should be used sparingly. A low-fat style of eating allows room for use of some fats and high-fat foods. The idea is balance and moderation The food pyramid suggests using added fats such as butter, margarine, and salad dressing sparingly. It is helpful to notice the amount of fat in these foods. Most of the added sugar in the American diet comes from soft drinks, candy, jams, jellies, syrups, and table sugar. Choose fewer foods that are high in sugars-candy, sweet desserts, and soft drinks.

MENU PLANNING

Menu planning in the Navy means devising meals that are nutritionally adequate and acceptable to the patrons. The term *providing for food needs* means that enough nourishing food must be served to satisfy the needs of the patrons and that this food should be attractive and acceptable to these personnel. This service must be accomplished consistently under varying afloat and ashore operating conditions in widely different geographic locations, using the foodservice capabilities of your ship or station.

FACTORS AFFECTING MENUS

Many factors affect the menu planner's choice of foods for the menu. Nutritional requirements, portion preferences, food costs, and availability of supplies are discussed next.

Nutrient Levels

Navy menus should be planned according to the principles of menu planning set forth in *Foodservice Operations,* NAVSUP P-421. In the menu-planning and nutrition education chapters of this publication, guidelines for Navy GMs are given that will meet the nutritional standards established by the Surgeon General. Menu-planning principles in *Foodservice Operations are* revised when nutrient standards are revised by the triservice nutritional standards regulation *(Nutritional Allowances, Standards, and Education,* AR-40-25, NAVMEDCOMINST 10110.1, AFR 160-95). These military recommended dietary allowances (MRDAs) are adapted from the most current National Academy of Sciences/National Research Council publication *Recommended Dietary Allowances.* Nutritional science is in a growth phase. New guidelines are based on new understandings of the relationship of nutrition and health.

Monetary Allowances

Economic factors invariably concern all menu planners. GMs are operated on a monetary ration allowance. The Navy Food Service Systems Office (NAVFSSO) publishes a list of fixed unit prices quarterly. This is used in pricing food items issued to the messes and in the monetary values of the basic daily allowance, supplementary allowances, and special allowances. The value of the basic allowance is developed from the standard Department of Defense Food Cost Index that contains a representative list of specific quantities of food items derived from the Navy Ration Law and the current Defense Personnel Support Center Price List. The basic daily food allowance is sufficient to feed a full daily ration under normal operating conditions. It is expected that, with proper management, an underexpenditure will exist at the end of the accounting period. This requires effective menu planning, control of issues, correct inventory procedures, food conservation programs, and a daily review of ration costs.

Food Item Restrictions

Food item restrictions should be considered. The *Federal Supply Catalog, Group 89, Subsistence,* lists all the food items procured for the armed services. Only foods listed and coded on the NAVSUP Form 1059 may be used in Navy GMs.

To request a new food item, consult the introduction to the *Federal Supply Catalog, Group 89, Subsistence,* for Navy procedures.

Seasonal Availability of Food Items

Seasonal availability of food is important in that menus should be adjusted to take advantage of seasonal changes in the supply of fresh produce. Canned, frozen, or dehydrated fruits, juices, and vegetables supplement the fresh menu items and are comparable in nutritive value.

Equipment Personnel, and Storage Facilities

Limited storage space, especially on small craft deployed on long cruises, prevents the use of many perishable food items. Menus for these activities should plan to use custom foods extensively to take best advantage of available storage space. Menus for such

cruises should be planned well in advance to assure balanced stocks that will enable you to prepare nutritious meals.

The choice of preparation of foods to be served will also depend upon the galley equipment, the number of personnel to be fed, and the number of MSs on duty.

Menus may be more elaborate if laborsaving equipment is available and a sufficient number of MSs are on duty to allow for the preparation of last-minute items. In summary, determining the choice of menu items should include the following considerations:

- The type and capacity of the galley equipment
- The number of personnel to be fed
- The number of workers in the galley

Avoid menus that require too much last-minute preparation. Plan a balance between the foods that can be prepared in advance without deteriorating in quality and those that must be prepared just before serving time.

Presentation Factors

Foods that look good and complement each other always have an advantage over those that are less attractive, even though they may be equally well prepared and nutritious. Learn to choose and combine foods in such a way as to achieve variety and harmony, both in appearance and flavor. The following suggestions will help you:

- Vary the methods of preparation of the food served. Carrots, for example, can be served raw, buttered, french fried, seasoned with lemon juice, or combined with peas.
- Consider the color of the food selected. Choose colors that look well together. Avoid too many foods of the same color at any one meal.
- Avoid the use of unsuitable colors for food. Serve interesting combinations of flavors. Combine mild and strong flavors but do not kill a delicate flavor with an unsuitable flavor combination. Avoid using the same flavor twice in the same meal.
- Combine different shapes such as diced potatoes, sliced meats, and leafy vegetables.
- Do not plan all soft, dry, or moist foods for any one meal. Vary the texture.
- Review the cycle menu each time it is used. Generally, avoid having the same meal on the same day of every week.

MENU-PLANNING TOOLS

The skill of the menu planner is reflected in the meals served in the Navy. Developing skill in appraising operating conditions, food acceptance, and food supplies in terms of potential meals is a demanding and responsible task. To accomplish these tasks, you should develop the following skills:

- Gain basic knowledge of menu-planning principles
- Balance meals in nourishing and attractive combinations of foods
- Keep food costs with.unjustifiable limitations and prescribed monetary allowances
- Plan for efficient food supply management and logistics

Flexibility and adaptability are essential to the proper planning of meals. Rarely will you be able to use standard menus. The foods that are written into your ship's menu should vary as operating conditions vary. Even ships of the same type as yours, operating under the same conditions and in the same area, probably could not use exactly the same menus. The ability to adapt menus is a skill you must acquire.

The most important sources of guidance for menu planning are described in this section.

Food-Preparation Worksheet

The Food-Preparation Worksheet, NAVSUP Form 1090, is a very important document and should be properly maintained. This form serves as a written directive between the leading MS and the personnel on watch. A food-preparation worksheet should be prepared for each space in which food is prepared. The food-preparation worksheet will prove its worth to you when you use it regularly because it provides much information and guidance.

The worksheet helps reveal the strengths and weaknesses of the menu. When the preparation of the daily menu is plotted on a worksheet, weaknesses and bottlenecks stand out vividly. For example, you may find that all menu items are to be prepared in the same three steam-jacketed kettles or that the three main menu

items are to be oven-prepared, each item requiring a different oven temperature.

The worksheet helps you plan and organize the work to be performed by your subordinates. The information written in the Start Preparation, Start Cooking, and Instructions columns will help subordinates plan their work. Careful planning avoids the problem of having too much food prepared ahead of serving time.

The worksheet helps you to supervise the work performed by your subordinates. As a written directive, the worksheet is your way of communicating instructions concerning the preparation of the day's menu to subordinates. You cannot depend on your memory nor can you expect subordinates to depend on their memory.

The worksheet helps you to train subordinates who will be responsible for a galley operation in the future. Discuss the worksheet with your watch captains so that they know exactly how the menu is to be prepared. Point out the supervisory techniques you want them to use in their working relations with the crew. After each meal, meet with your watch captain and key personnel to critique the meal. This is the ideal time to discuss the acceptability of menu items and to record the acceptability on the worksheet. The critique session provides the information essential to promote efficient operations.

If your personnel are accustomed to following a worksheet, give the watch captains the experience of developing one. Let each watch captain prepare the worksheet on a monthly basis, plan the day's work discuss premeal preparation, and hold postmeal critiques. Delegating the development of the worksheet to the watch captain is excellent training if the leading MS is readily available to advise, guide, and monitor discussions and critiques.

Finally, the worksheet serves as a means for establishing control of (1) issues to the GMs (the quantities posted on NAVSUP Forms 1059 or 1282 should agree with the quantities needed to prepare the number of portions specified), (2) the quantity of each menu item prepared, (3) the portion size served, and (4) leftover menu items. Completed worksheets on file provide the invaluable past history needed for establishing controls. The acceptability of menu items will determine the quantity to break out, quantity to prepare, and any change in portion size.

Acceptability Factors

Customer acceptability of the menu is a major goal of the menu planner. There is no set pattern to indicate what foods the patrons will eat and enjoy. An individual's food tastes may be influenced by many factors, such as likes and dislikes before entering the service, the foods one has learned to eat and enjoy during a service career, and the group of friends one eats with at mealtime. The menu planner should know the customers so that the meals planned will be well accepted. The following are ways that the menu planner can determine the acceptability of specific foods in the mess.

A food acceptance factor is one that expresses the percentage of people who eat a particular dish. To obtain an acceptability factor for individual menu items, divide the number of portions of the item served by the number of patrons in attendance at the meal.

Keep a record of menu item acceptance on the Food-Preparation Worksheet, NAVSUP Form 1090, the individual recipe card, or the Index of Recipes.

An acceptance factor is a valuable index of the popularity of menu items and should be used for this purpose after an item has been tested at several meals. Acceptance factors for the same menu item may vary from meal to meal. Different combinations of foods on a menu, different weather, or varying appetites may alter the acceptance of an item. A more accurate acceptance factor may result by averaging figures obtained for a particular menu over a period of time.

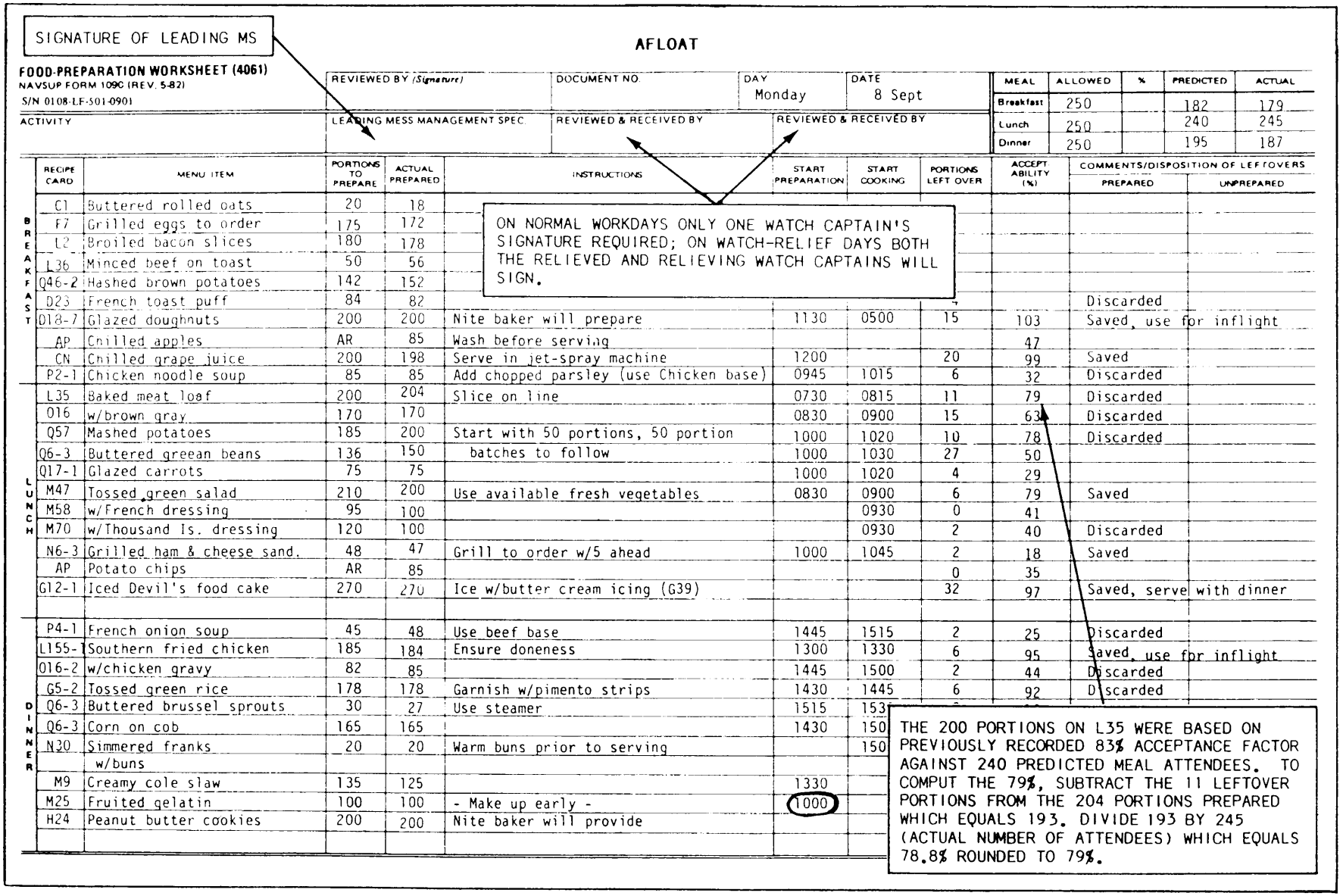
Another way to determine acceptability is to keep a systematic check on plate or tray waste. This should be recorded on the food-preparation worksheet. (See figs. 7-2 and 7-3.)

Good food acceptance means less plate waste and fewer leftovers to account for in planning future meals. Even popular foods may become monotonous if served too often.

Food Preference Ratings

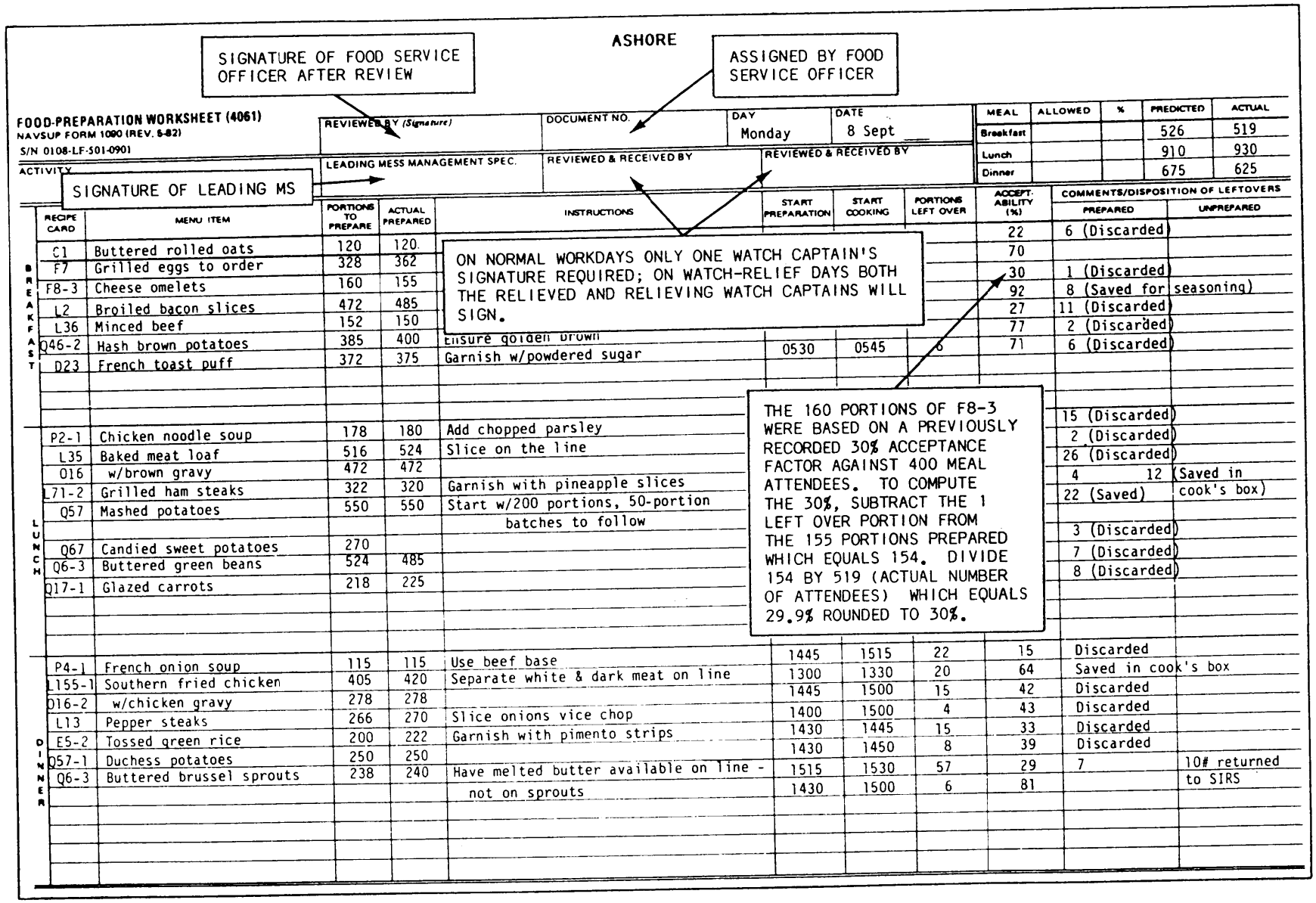
The fact that the patrons will take or accept items on the serving line does not prove that these are their preferred foods; they may take it merely because they have no better choice.

Food preferences or attitudes toward foods may be determined by several approaches. One approach is to solicit written opinions from the crew regarding items or classes of foods when you have doubts about their



	RECIPE CARD	MENU ITEM	PORTIONS TO PREPARE	ACTUAL PREPARED	INSTRUCTIONS	START PREPARATION	START COOKING	PORTIONS LEFT OVER	ACCEPTABILITY (%)	COMMENTS/DISPOSITION OF LEFTOVERS: PREPARED	UNPREPARED
BREAKFAST	C1	Buttered rolled oats	20	18							
	F7	Grilled eggs to order	175	172							
	L2	Broiled bacon slices	180	178							
	L36	Minced beef on toast	50	56							
	Q46-2	Hashed brown potatoes	142	152							
	D23	French toast puff	84	82						Discarded	
	D18-7	Glazed doughnuts	200	200	Nite baker will prepare	1130	0500	15	103	Saved, use for inflight	
	AP	Chilled apples	AR	85	Wash before serving				47		
	CN	Chilled grape juice	200	198	Serve in jet-spray machine	1200		20	99	Saved	
	P2-1	Chicken noodle soup	85	85	Add chopped parsley (use Chicken base)	0945	1015	6	32	Discarded	
LUNCH	L35	Baked meat loaf	200	204	Slice on line	0730	0815	11	79	Discarded	
	O16	w/brown gray	170	170		0830	0900	15	63	Discarded	
	Q57	Mashed potatoes	185	200	Start with 50 portions, 50 portion	1000	1020	10	78	Discarded	
	Q6-3	Buttered greean beans	136	150	batches to follow	1000	1030	27	50		
	Q17-1	Glazed carrots	75	75		1000	1020	4	29		
	M47	Tossed green salad	210	200	Use available fresh vegetables	0830	0900	6	79	Saved	
	M58	w/French dressing	95	100			0930	0	41		
	M70	w/Thousand Is. dressing	120	100			0930	2	40	Discarded	
	N6-3	Grilled ham & cheese sand.	48	47	Grill to order w/5 ahead	1000	1045	2	18	Saved	
	AP	Potato chips	AR	85				0	35		
	G12-1	Iced Devil's food cake	270	270	Ice w/butter cream icing (G39)			32	97	Saved, serve with dinner	
DINNER	P4-1	French onion soup	45	48	Use beef base	1445	1515	2	25	Discarded	
	L155-1	Southern fried chicken	185	184	Ensure doneness	1300	1330	6	95	Saved, use for inflight	
	O16-2	w/chicken gravy	82	85		1445	1500	2	44	Discarded	
	G5-2	Tossed green rice	178	178	Garnish w/pimento strips	1430	1445	6	92	Discarded	
	Q6-3	Buttered brussel sprouts	30	27	Use steamer	1515	153				
	Q6-3	Corn on cob	165	165		1430	150				
	N30	Simmered franks	20	20	Warm buns prior to serving		150				
		w/buns									
	M9	Creamy cole slaw	135	125		1330					
	M25	Fruited gelatin	100	100	- Make up early -	1000					
	H24	Peanut butter cookies	200	200	Nite baker will provide						

Figure 7-2.—Preparation of an afloat Food-Preparation Worksheet, NAVSUP Form 1090.



FOOD-PREPARATION WORKSHEET (4061)
NAVSUP FORM 1090 (REV. 6-82)
S/N 0108-LF-501-0901

ACTIVITY

REVIEWED BY (Signature) | DOCUMENT NO. | DAY: Monday | DATE: 8 Sept

LEADING MESS MANAGEMENT SPEC. | REVIEWED & RECEIVED BY | REVIEWED & RECEIVED BY

MEAL	ALLOWED	%	PREDICTED	ACTUAL
Breakfast			526	519
Lunch			910	930
Dinner			675	625

	RECIPE CARD	MENU ITEM	PORTIONS TO PREPARE	ACTUAL PREPARED	INSTRUCTIONS	START PREPARATION	START COOKING	PORTIONS LEFT OVER	ACCEPT-ABILITY (%)	COMMENTS/DISPOSITION OF LEFTOVERS: PREPARED	UNPREPARED
BREAKFAST	C1	Buttered rolled oats	120	120					22	6 (Discarded)	
	F7	Grilled eggs to order	328	362					70		
	F8-3	Cheese omelets	160	155					30	1 (Discarded)	
	L2	Broiled bacon slices	472	485					92	8 (Saved for seasoning)	
	L36	Minced beef	152	150					27	11 (Discarded)	
	Q46-2	Hash brown potatoes	385	400	ensure golden brown				77	2 (Discarded)	
	D23	French toast puff	372	375	Garnish w/powdered sugar	0530	0545	6	71	6 (Discarded)	
LUNCH	P2-1	Chicken noodle soup	178	180	Add chopped parsley					15 (Discarded)	
	L35	Baked meat loaf	516	524	Slice on the line					2 (Discarded)	
	Q16	w/brown gravy	472	472						26 (Discarded)	
	L71-2	Grilled ham steaks	322	320	Garnish with pineapple slices					4 12 (Saved in cook's box)	
	Q57	Mashed potatoes	550	550	Start w/200 portions, 50-portion batches to follow					22 (Saved)	
	Q67	Candied sweet potatoes	270							3 (Discarded)	
	Q6-3	Buttered green beans	524	485						7 (Discarded)	
	Q17-1	Glazed carrots	218	225						8 (Discarded)	
DINNER	P4-1	French onion soup	115	115	Use beef base	1445	1515	22	15	Discarded	
	L155-1	Southern fried chicken	405	420	Separate white & dark meat on line	1300	1330	20	64	Saved in cook's box	
	Q16-2	w/chicken gravy	278	278		1445	1500	15	42	Discarded	
	L13	Pepper steaks	266	270	Slice onions vice chop	1400	1500	4	43	Discarded	
	E5-2	Tossed green rice	200	222	Garnish with pimento strips	1430	1445	15	33	Discarded	
	Q57-1	Duchess potatoes	250	250		1430	1450	8	39	Discarded	
	Q6-3	Buttered brussel sprouts	238	240	Have melted butter available on line - not on sprouts	1515	1530	57	29	7	10# returned to SIRS
						1430	1500	6	81		

Figure 7-3.—Preparation of an ashore Food-Preparation Worksheet, NAVSUP Form 1090.

relative popularity. A questionnaire may be developed on which the patrons indicate their preference for various items. The manner in which the foods are described, the instructions given with the questionnaire, and where and when it is filled out are important factors to consider if you are to obtain good reliable data.

The most commonly used food preference questionnaire is a rating scale given to each person attending the meal or at some other appropriate time. This type of questionnaire is easily tabulated and is reliable because checking or circling a block is all that a person is required to do.

Food preference questiomaires can determine which single food items are most or least popular, their desired frequency of use on a menu, and what menu combinations are most or least liked. An example of how to canvass for opinions on single food items is given in figure 7-4. These food preference questionnaires should be updated periodically because tastes change, new personnel come aboard, and new items are procured.

Another type of questionnaire used may prove beneficial to the menu planner and the MS. This questionnaire is completed by the MS on watch concerning the meal just prepared. (See fig. 7-5.)

Food Usage Records

A 42-day menu with valid acceptability factors can be used to estimate the requirements for a 45-day (42 actual) load out. Add one-third of initial requirements for a 60-day (56 actual) period. By doubling the initial requirement, the time can be extended to a 90-day (84

FOODSERVICE DIVISION

Date _____

List below any information that will be beneficial in the future planning of menus. All Mess Management Specialists are encouraged to write comments concerning the meal you just prepared.

Color _____

Texture _____

Taste _____

Equipment _____

Manpower _____

Variation _____

Additional Comments _____

Figure 7-5.—Foodservice division questionnaire.

CIRCLE ONE ANSWER AFTER EACH FOOD						
	FOOD ITEM					
Not tried	Steamed frankfurters	Like very much	Like moderately	Neither like nor dislike	Dislike moderately	Dislike very much
Not tried	Pineapple and cottage cheese salad	Like very much	Like moderately	Neither like nor dislike	Dislike moderately	Dislike very much
Not tried	New England dinner	Like very much	Like moderately	Neither like nor dislike	Dislike moderately	Dislike very much
Not tried	Buttered green lima beans	Like very much	Like moderately	Neither like nor dislike	Dislike moderately	Dislike very much
Not tried	Scalloped potatoes	Like very much	Like moderately	Neither like nor dislike	Dislike moderately	Dislike very much

Figure 7-4.-Sample food preference questionnaire.

actual) period, and soon. Type commanders establish operational endurance requirements; the 42-day cycle can be easily adapted to the type commander's requirements.

A first consideration in advance menu planning should be balanced requisitioning. Past usage records help attain this balance by showing what is on hand and what items are needed. Planning calendars of stock rotation will prevent a rewrite of menus to incorporate surplus stocks of on-hand items. Items should be rotated on a regular basis, oldest stocks should be used first.

Menu-Planning Guides

A menu plainer needs to be well informed. Sources of information kept within easy reach will be valuable in planning menus. Previous menu plans on file will give a good indication of what is practical for the preparation facilities and number of personnel served at a particular location.

***FOODSERVICE OPERATIONS, NAVSUP* P-421.—** Navy menus should be planned according to the principles of menu planning set forth in *Foodservice Operations,* NAVSUP P-421. In the Menu Planning and Nutrition Education chapters of this publication, guidelines for Navy GMs are given that will meet the nutritional standards established by the Surgeon General.

***STANDARDS OF FOOD SERVICE,* NAVSUPINST 4061.11.—** Section I of this instruction, Menu Planning and Food Preparation, establishes updated menu-planning standards that can be attained by all Navy GMs to assure wholesome, nutritious meals.

***ARMED FORCES RECIPE SERVICE,* NAVSUP P-7.—** The AFRS, NAVSUP P-7, consists of a file of approximately 1,800 recipes and recipe variations printed on 5- by 8-inch cards. The cards are color-coded to make identification easier. The AFRS includes color photographs of certain recipe finished products, guideline cards, and line drawings of bread and sweet roll makeup procedures. The recipes are standardized to generally yield 100 portions and include efficient preparation techniques. The Index of Recipes, an adjunct to the AFRS, is a compact list of all recipes contained in the recipe service. Continuous use of the Index of Recipes in planning menus will help avoid menu monotony and will provide ideas for new menu combinations. Commands are encouraged to send their favorite recipes to NAVFSSO for consideration for inclusion in the AFRS. All recipes are tested and evaluated for militarywide acceptability and adaptability.

The AFRS is a basic tool for requisitioning and planning workloads. Cost records for individual recipes and recipe acceptability factors may be added to the recipe cards. Recipe cards are also used to obtain a plan for the most efficient use of galley equipment. The use of local recipes is encouraged. Local recipes should be in AFRS format and approved by the food service officer.

***NAVY FOOD SERVICE,* NAVSUP P-476.—** This publication is a quarterly publication of NAVFSSO and is distributed to all activities having GMs. The publication contains useful information on commodities, equipment for galley use, GM modernization, revisions to publications, suggested special event or holiday menus, nutrition, sanitation, training, hints on food preparation, foodservice operations, menu planning, and recordkeeping.

Meal Attendance Predictions

Ashore units use signature head counts to document actual personnel fed. Afloat units underway receive full ration credit for all enlisted personnel entitled to be fed in the GM. A mechanical counting device should be used to determine ration credit for in-port periods based on the number of meals actually fed. There are variations in meal attendance from day to day and meal to meal. Head count records should be kept to show how many people were served at each meal. Estimates of future attendance are based on past records and experience. Factors such as weather, proximity to payday, and liberty trends must be taken into account when predicting attendance.

CYCLE MENU SYSTEM

The cycle menu system is the menu rotation plan recommended for use in Navy GMs. The cycle menu is a series of menus planned to be used consecutively with some variations over a period of time. A cycle menu, rotated with appropriate changes on a quarterly or seasonal basis, is recommended for Navy GMs. They should be reviewed continuously to increase variety and eliminate unpopular dishes. Cycle meals save time and are easier to analyze thoroughly and to perfect than those written on a weekly basis. Cycle menus also lend themselves to more forecasting of ration costs and

requirements for requisitioning and daily food preparation.

In some messes, a family night is offered once or twice a month. This affords the family and friends the opportunity to visit the command and enjoy a meal and pleasant conversation. It also stimulates morale, promotes good will, and makes family members feel more a part of the Navy.

Advantages of the Cycle Menus

The principal advantages of a cycle menu are better meals, time savings, improved cost control, and more effective supervision and training.

While the cycle menu is in use, the menu planner can refine the menu and make changes-tailoring it to patrons' preferences, available supplies, and incorporating seasonal fruits and vegetables and special events. Breakout quantities can be brought closely in line with actual requirements when menus are repeated. The cycle period can consist of as many weeks or months as practical.

In deciding the most desirable cycle length, the variety and frequency of resupply and the number of duty sections should be taken into consideration as well as the MS watch schedule. Because the accepted cook watch is port and starboard, an odd-numbered day cycle (21 days) allows each watch the opportunity to prepare the entire cycle menu by the time the cycle has repeated two times (42 days).

Varying the Cycle Menu

Perfecting the basic menu and introducing variety can be made easier with sample cycle menus available from other sources. Past menus may be used as a guide if they have gained acceptance.

Experience gained through actual preparation and service of the menu points out shortcuts, better preparation techniques, proper timing of food preparation, the arrangement of food on the serving line, preferred serving sizes, and the most attractive arrangement of food on the trays. Supervisors can provide the level of training and supervision required to perfect each meal.

If the daily ration control record shows that the cost of the meals in the cycle menu is excessive or is grossly below the allowed ration rate, the menu can be changed to bring costs within acceptable limits. If inventories point out stocks that are either in long or short supply, temporary adjustments to the cycle menu can be made to balance stocks.

Adjusting Meals for Climate

The menu is seasonal in the sense that plans are altered to include the special foods featured for each season. Foods in season have a higher quality, are usually cheaper, and are better flavored.

Adjusting Navy meals for the climate should also take into account the great variation in climatic conditions under which Navy ships and shore stations operate. Menu plans should be made to suit the weather in which you are operating. Food needs differ, and appetites usually change with variations in temperature. Crisp, cool, fresh finds are appealing to the patron in hot weather. Heavier, heartier foods such as hot soups, stews, and hot cereals are welcomed in cold weather. Fresh fruits and vegetables are at their highest quality and lowest price at seasonal peak. In hot weather, a variety of beverages, including fruit juices, should be available.

LOADING GUIDES.— The best guides for planning menus and determining loading requirements are accurate records of a ship's own past usage and menu plans or menu summaries of previous extended cruises. Usage data and menus used during extended cruises should be collected to provide a basis for balanced loading for future deployment.

The 45-day Subsistence Endurance Base (SEB) contained in *Food Service Management,* NAVSUP P-486, volume I, is a guide that can be used with ship's usage data in planning menus and load lists for 60-, 75-, 90-, and 120-day operational endurances.

Menus not only affect the health and morale of the crew, but also directly affect the endurance of a ship. Endurance requirements vary among ship types and classes, and the amount of food storage space varies even between ships with identical complements. Proportionately smaller quantities of perishable foods are available on extended cruises, and this calls for increased use of semiperishables, particularly ration-dense foods.

FREQUENCY CHARTS.— Developing a meat plan, frequency charts, and spacing patterns are necessary preplanning functions that assure an acceptable, appealing menu that is also within the daily monetary allowance.

A meat plan (fig. 7-6), also called a meat block shows the number of times the various types of meat (including breakfast meats), fish, poultry, and cheese are to be used each week on the cycle menu. This planned usage is directly related to the relative costs of these items, their relative popularity, and their availability. A planned pattern of usage during the cycle menu period will enable you to balance the use of expensive, moderately expensive, and inexpensive meat items.

Construction.— The menu planner uses past menus that have known acceptability, the inventories of stocks on hand, and the *Federal Supply Catalog, Federal Supply Group 89, Subsistence, as* guides for developing the meat plan. When the meats have been chosen, they

MEAT, FISH, POULTRY ITEMS	NUMBER MEALS/WEEK						TOTAL MEALS
	1	2	3	4	5	6	
LUNCH, DINNER							
BEEF							
OVEN ROAST	1		1		1		3
POT ROAST		1		1		1	3
SWISS STEAK	1		1		1		3
GRILLED STEAK	1		1			1	3
GROUND	2	1	2	2	1	2	10
PATTIES	1	2	2	1	2	1	9
DICED			1				1
LIVER	1		1		1		3
FRANKFURTERS		1		1		1	3
HAM							
CANNED	1		1		1		3
COOKED, FROZEN . . .	1	1		1		1	4
PORK							
DICED			1			1	2
PORK LOIN		1		1			2
PORK CHOPS	1		1		1	1	4
SPARERIBS	1				1		2

Figure 7-6.-Sample meat plan.

are plotted on a frequency chart, spaced on a spacing pattern, and finally entered on the menu draft.

Frequency charts and spacing patterns form the framework of the menu and like the meat plan, are developed before the menu is drafted.

Frequency charts are developed for each major menu item or section; that is, the meat, poultry, fish entrées, potatoes or potato substitutes, vegetables, salads, desserts, soups, and breads that form the basic menu structure. These charts serve as the advanced plotting of what to feed at which meal (breakfast, lunch, or dinner) and how often. An example of a vegetable frequency chart is shown in figure 7-7.

Spacing patterns (fig. 7-8) show when the item will be served With a spacing pattern, the menu planner can plot a balanced distribution of food items so that there is an appropriate interval between the less popular items that are served, and so that the menus are not beef heavy or corn heavy.

Revision.—An important step in the final review of cycle menus is the use of the frequency chart to check the menu for repetition. This is done by listing the number of meals containing each type of food. Then checking that the spacing of similar items, such as ground beef, is adequate, that different methods of preparation are used, and that the basic menu features a

1 VEGETABLES	2 1st week			2d week			3d week			4th week			5th week			6th week			3 TOTAL TIMES SERVED		
	B	L	D	B	L	D	B	L	D	B	L	D	B	L	D	B	L	D	B	L	D
Corn (10 meals)																					
Fresh																					
—on the cob		1																		1	
—whole grain					1						1							1		2	1
Canned																					
—cream style			1											1						1	1
—whole grain								1				1					1			2	1
Onions																					
Dry	1			1		1		1	1				1	1					3	2	2
Dehydrated		1			1			1		1									1	3	
Carrots																					
Fresh		1				1									1					1	2
Canned			1					1				1								1	2

1. ITEM Column: List major menu items and not recipe components (such as flour, salt, butter). This list reflects the food preferred and the varieties or forms in which the foods are available. As food preferences change or availability of certain items is altered, the foods listed may be adjusted.
2. WEEK Columns: Each weekly column is divided into three columns representing breakfast (B), lunch (L), and dinner (D). This breakdown assists in planning the distribution of the same major menu items among these meals over a 42-day period. If over a 6-week period, corn is planned for 10 meals, the chart shows: Frozen on the cob corn the 1st week,once at dinner; frozen whole grain corn, 2d and 4th week, once at lunch, and 6th week, once at dinner; canned corn, cream style, 1st week, once at dinner, 3d and 5th week, once at lunch; canned whole grain corn, 1st and 6th week, once at lunch, 4th week, once at dinner.
3. TOTAL TIMES SERVED Column: This is subdivided into three meals to assist in estimating breakout requirements. It indicates the number of times major menu items are served at specific meals over the 42-day period.

Figure 7-7.-Sample vegetable frequency chart.

WEEK	MEAL	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
1	B	BACON	SAUSAGE PATTIES	GRILLED HAM	CANNED LUNCHEON MEAT	BACON	GROUND BEEF	BACON
	L	GROUND BEEF	CANNED SALMON, COOKED BONELESS HAM	PREFORMED BEEF PATTIES	PORK ROAST	SWISS STEAK	FRANKFURTERS	CHICKEN, CUT-UP
	D	PORK SLICES	BEEF ROAST	BONELESS TURKEY	GROUND BEEF PEPPERONI (PIZZA)	PERCH, SHRIMP, FISH PORTIONS, COOKED BONELESS HAM	POT ROAST	PREFORMED PATTIES
2	B	SAUSAGE PATTIES	BREAKFAST STEAKS	BACON	CORNED BEEF HASH	SAUSAGE PATTIES	BACON	CANNED HAM
	L	CORNED BEEF HASH	PREFORMED BEEF PATTIES	FISH PORTIONS, SALAMI, CANNED HAM, CHEESE (SUBS)	DICED PORK	COOKED BONELESS HAM	DICED BEEF	BONELESS TURKEY
	D	SWISS STEAK	PORK SLICES	CHICKEN, CUT-UP	BEEF ROAST	LIVER GROUND BEEF	PORK ROAST	POT ROAST

1. SHOW THE CUT OR TYPE OF MEAT, FISH, OR POULTRY PLANNED FOR EACH MEAL, NOT THE RECIPE NUMBER.
2. PLAN AN EVEN DISTRIBUTION OF ENTRÉES TO PREVENT MENUS FROM BECOMING "PORK HEAVY" OR "BEEF HEAVY."

Figure 7-8.— L-Sample meat spacing pattern.

variety of dishes. It is particularly important to check the meal plans for the first 3 days at the beginning of the first week's menu and the end or last 3 days of the preceding week's menu in the cycle. Revise the frequency chart by eliminating identical or similar items served too close in succession.

MENU BOARDS.— Menu boards assist in planning menus that are based on crew preferences. There are two kinds of menu boards: (1) a menu-planning board that actually plans the menu within the foodservice division and (2) a menu-review board that functions in an advisory capacity.

Menu-Planning Board.— A menu-planning board acts on major decisions affecting food supplies, on the selection of food choices commensurate with galley equipment, workload, and other administrative decisions. The menu-planning board should be composed of personnel with foodservice experience. The menu-planning board consists of MSs from the foodservice division.

Menu-Review Board.— The menu-review board consists of personnel from all divisions on board. This board can bring in new ideas on menu planning. All commanding officers formulate their own policy as to the number of board members. Menu boards, their requirements and functions, are discussed in *Foodservice Operations,* NAVSUP P-421.

Menu Changes.— The commanding officer may grant written permission to the food service officer to make necessary changes in the approved menu. Such authorization may be furnished in the ship or supply department organizational manual. Under this authority the food service officer may make changes in the menu necessary to meet any emergency that might arise. At

the discretion of the commanding officer, a weekly summary of menu changes made and the reasons for the changes are provided to the commanding officer at the time the forthcoming weekly menu is submitted for approval.

Each menu should include a notation at the bottom of the menu stating that "The food service officer is authorized to make changes to this menu when, due to unusual or unforeseen circumstances, it may be necessary to provide substitutions for food items not in stock or to permit timely use of perishable foods."

Menu changes should be kept to an absolute minimum and should not be made without advance approval by the food service officer.

SELECTIVE MENUS.— A selective (multiple-choice) menu includes one or more choices for the crew in each category. One or more choices are recommended under the following circumstances:

- If a popular entrée or vegetable is to be served, offer an alternative.
- When a high-calorie, high-fat entrée is to be served, offer an alternative.
- If savings can be realized by offering a high-cost entrée with a low-cost one, offer a choice.
- If practical from a production standpoint, a selection of various meal components can be offered, including entrées, vegetables, breads, and beverages.

DRAFTING THE MENU.— To do the best possible job in menu drafting the Navy menu planner needs a good working atmosphere in which to think. In addition, the sources of information mentioned earlier in this chapter-the meat plan, the frequency charts, and the spacing patterns that have been developed—are needed.

Most meals are planned around main dishes of meat, and other food items are planned to complement main dishes.

Use the standard Menu Draft, NAVSUP Form 1092, to build the week's menu (fig. 7-9). The menu planner has room for listing each menu item in a meal and has a column for the AFRS numbers to eliminate guesswork on the kind of food, the method of preparation, and the essential breakout data. Use standard abbreviations to achieve coordination between the jack-of-the-dust (or subsistence storeroom storekeeper) and galley personnel; for example, (f) for frozen, (cn) for canned, (dehy) for dehydrated, and (inst) for instant foods. Certain standard menu items, such as coffee, are printed on the draft to facilitate drafting.

The following steps illustrate the proper sequence in drafting major meal components:

Step 1—Main dishes, gravies, sauces, and accompaniments

Step 2—Potatoes, potato substitutes, and vegetables

Step 3—Salads

Step 4—Breakfast fruits and cereals

Step 5—Desserts

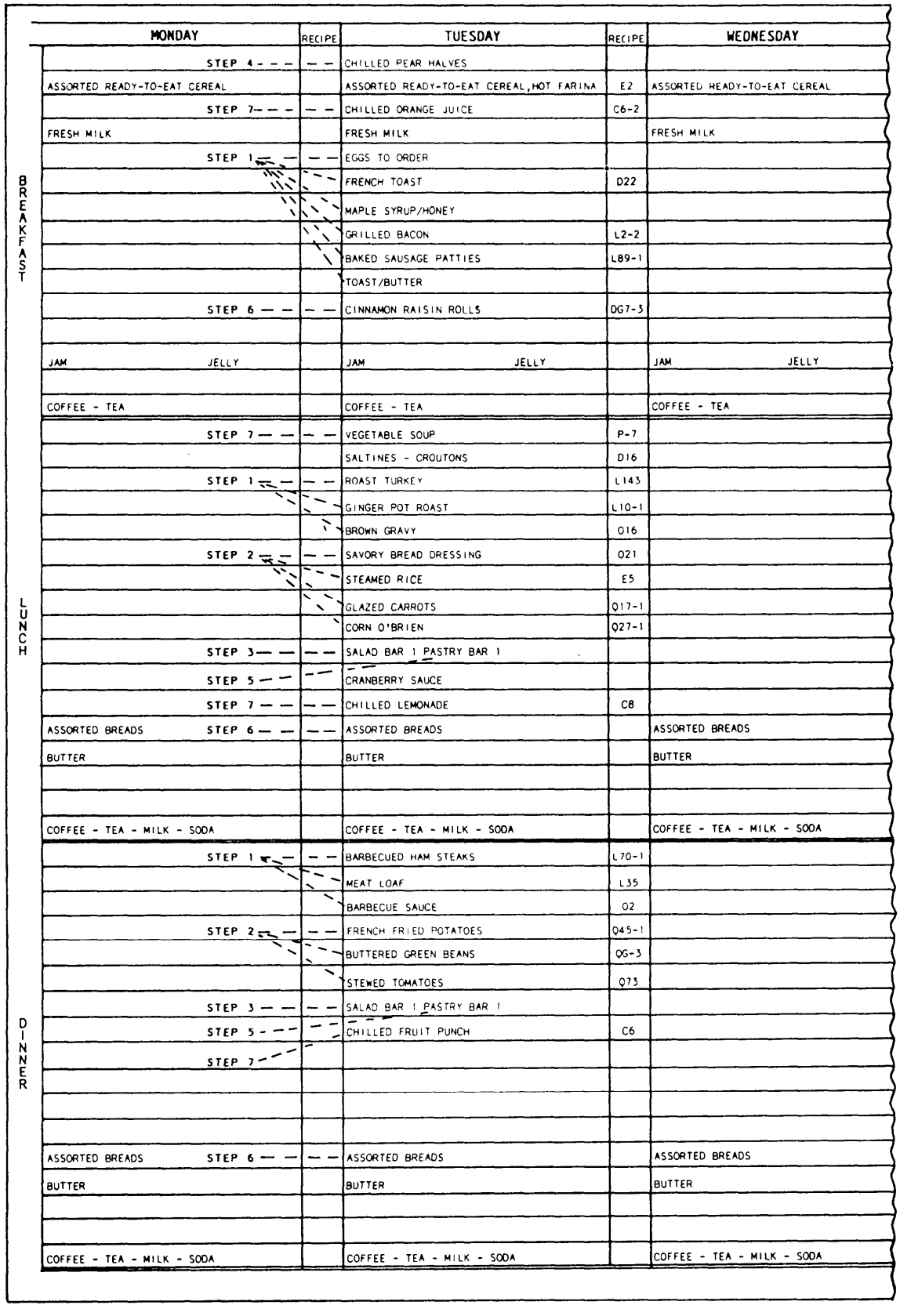
Step 6—Breads and breakfast pastries

Step 7—Soups and beverages

Accompaniments to menu items should be written alongside them, shown as follows, or may be written directly underneath them, space permitting.

Breakfast	Lunch or Dinner
Fruit or juice	Soup - crackers
Cereal - milk	Main dish - gravy or sauce
Main dishes	Potatoes
Breakfast pastry	Vegetables
Bread - butter	Salads and salad dressing
Jam - jelly	Bread
Beverages	Dessert
	Beverages

Meat, Poultry, and Fish.— Using information from the frequency chart and the spacing pattern, enter the meat, fish, or poultry entrées planned for each day on the menu draft form. Introduce variety to the menu by the recipes selected for the preparation of each meat cut or poultry entrée. For example, beef, pot roast on the frequency chart and spacing pattern, may be entered as L10-1 Ginger Pot Roast on the menu draft, and the next time this style of beef is repeated on the spacing pattern, it maybe entered as L10-2 Yankee Pot Roast on the menu draft. preplanning the entrées includes the selection of an alternative choice of meat when rabbit, fish, or liver is shown.



	MONDAY	RECIPE	TUESDAY	RECIPE	WEDNESDAY
BREAKFAST	STEP 4 - - -	- -	CHILLED PEAR HALVES		
	ASSORTED READY-TO-EAT CEREAL		ASSORTED READY-TO-EAT CEREAL, HOT FARINA	E2	ASSORTED READY-TO-EAT CEREAL
	STEP 7 - - -	- -	CHILLED ORANGE JUICE	C6-2	
	FRESH MILK		FRESH MILK		FRESH MILK
	STEP 1 - -	- -	EGGS TO ORDER		
			FRENCH TOAST	D22	
			MAPLE SYRUP/HONEY		
			GRILLED BACON	L2-2	
			BAKED SAUSAGE PATTIES	L89-1	
			TOAST/BUTTER		
	STEP 6 - -	- -	CINNAMON RAISIN ROLLS	DG7-3	
	JAM JELLY		JAM JELLY		JAM JELLY
	COFFEE - TEA		COFFEE - TEA		COFFEE - TEA
LUNCH	STEP 7 - -	- -	VEGETABLE SOUP	P-7	
			SALTINES - CROUTONS	D16	
	STEP 1 - -	- -	ROAST TURKEY	L143	
			GINGER POT ROAST	L10-1	
			BROWN GRAVY	O16	
	STEP 2 - -	- -	SAVORY BREAD DRESSING	O21	
			STEAMED RICE	E5	
			GLAZED CARROTS	Q17-1	
			CORN O'BRIEN	Q27-1	
	STEP 3 - -	- -	SALAD BAR 1 PASTRY BAR 1		
	STEP 5 - -	- -	CRANBERRY SAUCE		
	STEP 7 - -	- -	CHILLED LEMONADE	C8	
	ASSORTED BREADS STEP 6 - -	- -	ASSORTED BREADS		ASSORTED BREADS
	BUTTER		BUTTER		BUTTER
	COFFEE - TEA - MILK - SODA		COFFEE - TEA - MILK - SODA		COFFEE - TEA - MILK - SODA
DINNER	STEP 1 - -	- -	BARBECUED HAM STEAKS	L70-1	
			MEAT LOAF	L35	
			BARBECUE SAUCE	O2	
	STEP 2 - -	- -	FRENCH FRIED POTATOES	Q45-1	
			BUTTERED GREEN BEANS	QG-3	
			STEWED TOMATOES	Q73	
	STEP 3 - -	- -	SALAD BAR 1 PASTRY BAR 1		
	STEP 5 - -	- -	CHILLED FRUIT PUNCH	C6	
	STEP 7 - -				
	ASSORTED BREADS STEP 6 - -	- -	ASSORTED BREADS		ASSORTED BREADS
	BUTTER		BUTTER		BUTTER
	COFFEE - TEA - MILK - SODA		COFFEE - TEA - MILK - SODA		COFFEE - TEA - MILK - SODA

Figure 7-9.—A Menu Draft, NAVSUP Form 1092.

When all entrées for the cycle have been entered on each week's draft, it is good management to review the drafts to determine the following: (1) whether the proper variety and balance are maintained, (2) if higher portion cost entrées are balanced with lower portion cost entrées, and (3) if preparation of the entrées is within the capabilities of galley personnel and equipment.

Vegetables.— Frequency charts are developed for both potatoes or potato substitutes and vegetables in conjunction with the meat frequency charts so that the items selected will complement the meat, fish, or poultry item planned for each day. Entering the potato or potato substitute and vegetables on the menu draft is the second step in menu planning. Variety of preparation of the entrée items should be introduced on the menu by the selected recipe card.

Salads and Salad Dressing.— The AFRS offers many varieties of salads and kinds of salad dressings, as well as recipes for relishes. These numerous recipes are a fine foundation for a varied bar of consistently high quality. An array of salads and relishes can be prepared from the excellent variety of fresh, frozen, and canned fruits and vegetables available.

When you are selecting salads for the menu, planning is needed to achieve variety and to avoid costly leftovers. Because the salad bar generally offers some variety, there is a temptation to offer the same assortment daily. With good planning, changes from day to day can be achieved.

When you are planning for salads and relishes, there are several factors to consider: (1) seasonal availability for procurement, (2) temperature and climate, (3) equipment and labor, and (4) combinations of salad ingredients.

Select a salad dressing suited to the salad ingredients on which it is to be used. Use tart dressings with bland-flavored salads. Consult your *Foodservice Operations*, NAVSUP P-421, for ideas.

Breakfast Fruits and Cereals.— Steaming hot cooked cereals are a welcome and warming component of a hearty breakfast in cold weather. Warmer climates and higher temperatures tend to swing the popularity pendulum toward dry, ready-to-eat cereals.

Offer a choice of fruit and juice each day to make sure a good source of vitamin C is available to the patrons. Either the fruit or the juice should be citrus or tomato. In addition, fruits can be used to introduce variety on the menus; for example, raisins in oatmeal or rice, blueberries in pancakes, and apples in fritters.

Desserts.— Desserts should be individualized to each meal just as other menu components, taking into account the patrons' preferences and other factors influencing the menu, such as climate, cooking facilities, and the skills of the personnel.

Desserts are classified as light, medium heavy, or heavy. Plan to use the one that goes best with the rest of the meal. If the meal includes hearty salads and creamed vegetables, a light dessert, such as fruit cup or flavored gelatin, is more appropriate than a medium heavy one (puddings or ice cream and cookies) or heavy desserts (cakes and pies). Balance out the day's dessert by planning alight dessert (chilled pear halves and oatmeal drop cookies) with a heavy dinner at noon and a heavy dessert (spice cake with lemon cream icing) with a light supper. One heavy dessert daily, especially one that must be baked the same day it is to be served, is sufficient for most messes.

To ensure a variety of dessert choices in your menus, make maximum use of mixes, ice cream, prepared pie fillings, gelatin desserts, and other convenience foods.

A caution that should be observed, however, in planning desserts is avoiding a repetition of the same flavors. It is easy to miss hidden flavor repetitions when breakfast juices and dinner and supper salads contain fruit. Watch for these duplications in dessert planning.

Breads and Breakfast Pastries.— Piping hot yeast rolls and quick breads dress up a meal any day of the year. Hot breads can play an important role in balancing cold meals.

When you write a menu, be realistic. If baking facilities are limited or if inexperienced MSs have not yet fully developed their baking skills, you should limit baking items.

Soups.— The soup is one of the last items planned for a lunch or dinner menu. This sequence in menu planning is not based on the relative importance of soup to a menu, but rather on its relation to other menu items. Soups are classified as light, heavy, creamed, and chowder and, as with dessert items, are selected to balance and complement the menu. The number of times a soup is offered each day or each week should be based on the crew's acceptance of soup. If the acceptance of soup is high and you feel justified in including it on the menu at both lunch and dinner meals, plan to serve a different soup at each of these meals. Make maximum use of dehydrated soups and canned

condensed soups in order to offer a variety on the menu. Leftover soups are highly subject to contamination; consequently, they create a health hazard. Fresh soup should be prepared for each meal.

Beverages.— The beverage component of menus includes coffee or tea. Milk is very nutritious and deserves a permanent place on the menu. It can be served chilled plain, or flavored, or in hot cocoa as a cold weather beverage. Coffee and tea are not necessary for good health and offering another choice for either beverage is acceptable, such as good quality drinking water.

Iced beverages added to the menu during warm weather are refreshing and provide an enjoyable change from the steady consumption of hot coffee or tea during the winter months. All iced fruit beverages in the AFRS contribute additional vitamins and minerals, as well as energy from the sugar they contain. Avoid overuse of the same juices or fruit beverages on the weekly menus. Milk shake machines and carbonated soda dispensers may be used in the mess also.

RECORDING THE MENU.— The Menu Draft, NAVSUP Form 1092, should be carefully checked and edited for accurate recipe numbers as well as for correct recipe titles and should then be presented to the food service officer for analysis. The food service officer analyzes the menu to make sure it is nutritionally balanced and reflects sound management with respect to personnel, food supplies, and food preparation equipment. The NAVSUP Form 1092 should be returned to the leading MS (approved or with noted changes) for typing on the GM Menu, NAVSUP Form 1080. NAVSUP Form 1092 should be retained for use in preparing recipe number lists and instructions on the daily Food-Preparation Worksheet, NAVSUP Form 1090.

When you use the NAVSUP Form 1090, recipe numbers should be eliminated from the NAVSUP Form 1080.

The NAVSUP Form 1080 is signed by the leading MS in the Prepared By block, by the food service officer in the first Approved block and then submitted to the commanding officer or the designated representative for approval and signature in the second Approved block. Menus may be submitted for command approval each week or the cycle menu maybe submitted in its entirety quarterly, seasonally, or when a new cycle menu is prepared.

PLAN SPECIAL MENUS

Meals have three roles in Navy life: (1) to support physical health and fitness, (2) to build morale, and (3) to provide an occasion for socializing.

Holiday or Special Event Menus

Special meals for holidays or special meal celebrations (in GMs either afloat or ashore) provide opportunities for festivity among the crew. A well-planned special meal adds interest and creates real enthusiasm among the MSs and crew.

PREPARATION.— Creative menus may be planned using foods traditionally associated with the holiday. Research through the AFRS and the *Navy Food Service,* NAVSUP P-476, files should supply new ideas.

Figure 7-10 is a calendar listing special occasions generally celebrated. It is included for a handy reference.

The meal patterns suggested for breakfast, lunch, and dinner may be changed for holiday or specialty meals to include some extras for the celebration. Well-planned special meals will add interest and enthusiasm among cooks and patrons. They can be as simple or elaborate as time, personnel, and cost permit.

PRINTING.— Some GMs may have fancy menus printed for their entire cycle menu or for special events or holidays. The printed menu gives a kind of flavor of its own to special meals. These menus need not be elaborate to be attractive. They can be simply produced using a graphics program on a computer or you can have them produced professionally through the supply system.

Usually if menus are to be printed professionally, they are either going to be used permanently for a cycle menu or for holiday menus repeating from year to year.

Brunch Menus

A brunch is neither breakfast nor lunch. Brunch is something of each of these meals, yet it has its own special identity. The distinguishing features of brunch are time of service and the special-occasion, leisurely atmosphere that can accompany a brunch meal. The brunch meal is usually served between breakfast and lunch time, generally on weekends and holidays.

Brunch menus need not be elaborate to be attractive and satisfying. A number of menu items maybe added to a heavy breakfast meal to make a brunch meal. These

JANUARY	■ New Year's Day ■ Martin Luther King, Jr.'s Birthday	**JULY**	■ Independence Day ■ John Paul Jones' Birthday
FEBRUARY	■ Valentine's Day ■ President's Day ■ Black History Month	**SEPTEMBER**	■ Labor Day ■ Hispanic Heritage Week
MARCH	■ St. Patrick's Day ■ Easter Sunday (or April) ■ Navy Nutrition Month	**OCTOBER**	■ Columbus Day ■ Navy Birthday
MAY	■ Armed Forces Day ■ Mother's Day ■ Memorial Day ■ Pan Asian American Heritage Week	**NOVEMBER**	■ Veteran's Day ■ Thanksgiving
JUNE	■ Father's Day ■ Flag Day	**DECEMBER**	■ Christmas

Figure 7-10.-Calendar of special holidays and religious days.

may be extra ranging from first course to heavy entées to special types of cakes to complete the meal.

Imagination is the major key to successful brunch menus. Select luncheon entrées with staying power that combine easily and appetizingly with breakfast foods.

Above all, avoid overtaxing the cooking and serving facilities and personnel by planning menus that, for example, require too much oven space. Cooked-to-order foods are especially appropriate for brunch meals.

WARDROOM MENUS

As a senior MS assigned to a private mess you may hold the position of wardroom supervisor. Because of your knowledge and experience with foodservice and nutrition, the responsibility may rest with you to prepare and submit a nutritionally balanced cycle menu to the mess caterer for review. The mess caterer will then review the menu and submit it to the mess president for approval.

The same factors that affect the choice of foods used for the GM menu are used by the menu plainer to plan a private mess menu. The wardroom menu must also meet Navy nutritional requirements. As with the patrons of a GM, the preferences of wardroom mess members should be surveyed and considered in the menu-planning stage. The wardroom menu also should be limited to the supplies that are available. The menu should not be costly. Also there should be a moderation of high- and low-cost meals to keep the menu within the operating limits of the mess.